

REMARKS

Response to Arguments

The Examiner stated that the Applicant's arguments filed June 20, 2006, were fully considered, were found to be persuasive, and that the rejection was accordingly withdrawn. The Applicant gratefully acknowledges this determination.

The Examiner also stated, "However, upon further consideration, a new ground(s) of rejection is made in view of Behrin (US Patent No.: 5761254)." But no further explanation was provided concerning the new rejection in view of Behrin. It is respectfully submitted that 37 CFR §1.104(c)(2) specifies:

"In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified." [underlining for clarity]

Drawings

The Examiner stated that Applicant's arguments filed June 20, 2006 regarding the drawings have been fully considered but they were not considered to be persuasive. The Examiner stated that the Examiner has previously provided reasons why written descriptive labels are "necessary and essential". However, those previously provided reasons have acknowledged that the elements are all identified by reference numerals. Those reference numerals are all fully explained in the specification. This is conventional practice. To this the Examiner has then asserted that the components of the invention cannot be understood without a written label. But the Examiner has not explained why the reference numerals and written descriptions thereof in the specification, according to conventional practice, are considered by the Examiner to leave the drawings incapable of understanding such that written textual labels are necessary. The Examiner has shown no fatal disconnection between the specification and the component descriptions as linked by the reference numerals therefor.

The Rules of the Patent Office state:

37 CFR §1.74:

“...the detailed description of the invention shall refer...to the different parts by use of reference letters or numerals (preferably the latter).” [deletions and underlining for clarity]

37 CFR §1.84(o):

“...descriptive legends...may be required by the examiner where necessary for understanding of the drawing.” [deletions and underlining for clarity]

It is clear that the Applicant has complied with these Rules. The drawings show every claimed feature. The features in the drawings are explicitly identified by reference numerals that are explicitly described in the written specification, according to the Rules and to well-established conventional practice. Contrary, therefore, to the Examiner's assertion, identification of the components can be readily and easily performed. There is therefore no demonstrated necessity for textual labels in the drawings in order to readily gain understanding thereof.

The Examiner suggested that descriptive labels in the drawings would improve the quality of the application by facilitating understanding of the scope thereof by viewing the drawings. The Applicant appreciates this suggestion, and acknowledges that the Examiner may indeed be correct in this regard. However, the Applicant is attempting to prosecute this application in compliance with modern, universal expectations and guidance, which, as previously pointed out, strongly disapprove of and teach against the very practice which the Examiner is inculcating. Textual labels in modern patents are strongly discouraged, and should be employed only where manifestly and urgently necessary, as has been previously documented by the Applicant. No such necessity obtains in the present application, nor has the Examiner in fact shown any such necessity. 37 CFR §1.84(o), *supra*.

Further, such lack of necessity has been acknowledged by the Examiner. As previously pointed out, the same specification and drawings, by the same inventor, have been approved by this Examiner in a corresponding PCT application owned in common by the assignee of the present application and prosecuted by the same law firm. The Examiner's understanding and approval of the identical PCT drawings is an inescapable acknowledgement by the Examiner that there is no necessity for written labels to understand these drawings. The Examiner has refused to acknowledge this evidence on the grounds that

the Examiner does not feel privileged to discuss the PCT application in the present context. However, the assignee is privileged to waive that barrier, and in citing the PCT application has in fact done so. It therefore now becomes a matter of administrative arbitrariness for the Examiner to persist further in declining to address the Examiner's contrary and inconsistent determinations in two identically alike fact situations. Again, the present question is not one of convenience or of elegance, but of necessity. The Examiner has already determined on the record that there is no such necessity. To persist in maintaining the present drawings objections, therefore, is not only administratively arbitrary and improper, but is manifestly unjust to the Applicant.

Reconsideration and withdrawal of the requirement are therefore respectfully requested.

Claim Rejections - 35 USC §102

Claims 1-15 are rejected under 35 U.S.C. §102(b) as being anticipated by Guo (U.S. Patent No.: 5,400,370, hereinafter "Guo").

Guo provides an all-digital high speed algorithmic data recovery method and apparatus that uses locally generated compensated broadband time rulers and data edge position averaging. The all-digital data algorithmic recovery method and apparatus operates at jitter greater than 25% and run lengths more than 1000 bits. It uses self calibrated delay elements to phase align a locally generated time ruler reference with the data average transition position to establish the sampling time for retrieving data from an incoming binary sequence at the center of the data eye. The phase adjusted time ruler signal is used to sample transition positions of the data, and the sampled data is statistically analyzed in a state machine wherein the time ruler is a broadband signal comprising a first and second base frequency and wherein the period of one of the frequencies is $1/(F_R - F_T)$, where F_R equals the receiver local clock frequency and F_T equals the frequency of the distant clock.

The independent claims 1, 6, and 11 have been clarified to amend the previously claimed combination, as exemplified in claim 1, to now include the limitations of:

“determining the ΔT time delays of the delay elements without using a data signal under test;

digitally latching a data signal transition location using a stable sampling clock signal and only the output of the delay line;
digitally converting the data signal transition location to a delay time value output that is the ΔT time delays of the corresponding delay elements;"

The support for the above amendments is found respectively on page 12, lines 22-28, page 15, line 22, page 9, lines 19-27, page 11, line 17, and FIGs. 2 and 3.

The Applicant accordingly respectfully traverses the rejections of claims 1, 6, and 11 since the Applicant's claimed combination, as exemplified in claim 1, now includes the limitation not disclosed in Guo of:

"determining the ΔT time delays of the delay elements without using a data signal under test"

Guo does not disclose determining the ΔT time delays of the delay elements without using a data signal under test. Instead, Guo is directed to recovering incoming data and the associated data clock. Unlike the present invention, this means that Guo must have all the incoming data at Guo's output without skipping or missing any data bits. Further, Guo uses a delay chain value that is tied to the incoming data stream, and is fixed with a value of half of the data stream bit period. Unlike the present invention, in which the delay value is independent from the period of the data stream, in Guo the variable Guo delay value is very important for recovering incoming data and controlling the clock rate. Thus, Guo states:

"A principal objective of the present invention is to provide a general, all digital data recovery method..." (col. 3, lines 10-11)

"The serial incoming data on line 13" is sent to the cascaded time ruler delay 22 and 23, each of which delays for a time lapse equal to half of the bit period." (col 6, line 43-45)

"A plurality of cascaded adjustable delay elements 21' which each have delay of one-half T_b are controlled by the up/down shifter 90' on bus 1000. With reference also to FIG. 2b, timing diagrams, it is seen how the Local Reference Clock LCLK controls the regulation and calibration of the time ruler delay elements 21 such that each delay element 21' exhibits the time lapse equal to half of the bit period." (col 7, line 17-24)

Thus Guo does not disclose determining the ΔT time delays of the delay elements without using a data signal under test as now claimed in claims 1, 6, and 11.

The Applicant further respectfully traverses the rejections of claims 1, 6, and 11 since the Applicant's claimed combination, as exemplified in claim 1, now includes the limitation not disclosed in Guo of:

“digitally latching a data signal transition location using a stable sampling clock signal and only the output of the delay line”

Guo does not disclose digitally latching a data signal transition location using a stable sampling clock signal and only the output of the delay line. Instead, Guo uses a digital phase shifting clock to latch the transitions from 0 to 1 and 1 to 0. Guo's Figure 2b shows that SBITCK is sampling at the middle of the waveform 365. Guo thus detects the 0 to 1 and 1 to 0 transactions to average the center of a bit:

“The compensated broadband time ruler BITCK can be used to sample or recover the serial incoming data on line 13 only if its clocking edge can be aligned with the center of the data "eye", show in waveform 365. In FIG. 2b, BITCK 16 has to be delayed or phase shifted in the amount of Tdd to produce a phase shifted copy of the broadband time ruler SBITCK 16', the timing edge (rising edge) of which is aligned with the center of the data eye indicated by the dashed lines 344. When this alignment is accomplished, the time between the rising edge of the phase shifted SBITCK and the average data transition position should be half of the bit period as shown in time interval 366.” (col 8, lines 31–43)

Additionally, Guo's delay is a 90° phase resolution, and Guo uses priority encoding in the range of -180° to +180°, based upon the detection of both the 0 to 1 and 1 to 0, giving an up or down result for the sampling clock, to detect a complete data bit by averaging the edge position. Both the input and output of the delay chain are latched. The result of the priority encoding controls the “Phase Adjust Decision” to change the sampling clock SBITCK. This is shown in Guo by Figure 10, by 82, 88, 89, and 56 in Figure 1a, by 25 and 26 in Figure 3, and in Guo by:

“FIG. 10, shows the truth table for the various conditions and the corresponding decision control signals output of the Phase Adjust Decision block 82, FIG. 1a, are summarized. The E-L, I-O, and B-S tests have predetermined characteristics in each quadrature which can be used to make phase adjust decisions.” (col 11, lines 56–61)

“phase adjust decision command is not generated based on phase error of an individual edge, but rather on an averaged edge position or the average of the phase errors for many bits.” (col 12, lines 4–8)

Thus Guo does not disclose digitally latching a data signal transition location using a stable sampling clock signal and only the output of the delay line as now claimed in claims 1, 6, and 11.

The Applicant further respectfully traverses the rejections of claims 1, 6, and 11 since the Applicant's claimed combination, as exemplified in claim 1, now includes the limitation not disclosed in Guo of:

“digitally converting the data signal transition location to a delay time value output that is the ΔT time delays of the corresponding delay elements”

Guo does not disclose digitally converting the data signal transition location to a delay time value output that is the ΔT time delays of the corresponding delay elements. Instead, Guo uses a variable delay chain value that is set with a value of half of the data bit period. (This delay value determination is very important in Guo's device to the recovery of the incoming data and the associated clock.) As Guo explains:

“The serial incoming data on line 13” is sent to the cascaded time ruler delay 22 and 23, each of which delays for a time lapse equal to half of the bit period.” (col 6, line 43–45)

“A plurality of cascaded adjustable delay elements 21' which each have delay of one-half T_b are controlled by the up/down shifter 90' on bus 1000. With reference also to FIG. 2b, timing diagrams, it is seen how the Local Reference Clock LCLK controls the regulation and calibration of the time ruler delay elements 21 such that each delay element 21' exhibits the time lapse equal to half of the bit period.” (col 7, line 17–24)

Thus Guo does not disclose digitally converting the data signal transition location to a delay time value output that is the ΔT time delays of the corresponding delay elements as now claimed in claims 1, 6, and 11.

Based on the above, it is respectfully submitted that independent claims 1, 6, and 11, and the respective claims 2–5, 7–10, and 12–15 depending therefrom, are allowable under 35 USC §102(b) because:

“Anticipation requires the disclosure in a single prior art reference disclosure of each and every element of the claim under consideration.” *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983) (citing *Soundsciber Corp. v. United States*, 360 F.2d 954, 960, 148 USPQ 298, 301 (Ct. Cl.), *adopted*, 149 USPQ 640 (Ct. Cl. 1966)), *cert.*

denied, 469 U.S. 851 (1984). *Carella v. Starlight Archery*, 804 F.2d 135, 138, 231 USPQ 644, 646 (Fed. Cir.), *modified on reh'g*, 1 USPQ 2d 1209 (Fed. Cir. 1986); *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

Withdrawal of the rejection is therefore respectfully requested.

Regarding claims 2, 7, and 12, these dependent claims each depend from respective independent claims 1, 6, and 11, and are believed to be allowable since they contain all the limitations set forth in independent claim from which they depend and additionally claim non-obvious combinations thereof. Allowance of claims 2, 7, and 12 is therefore respectfully requested because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Regarding claims 3, 8, and 13, these dependent claims each depend from respective independent claims 1, 6, and 11, and are believed to be allowable since they contain all the limitations set forth in independent claim from which they depend and additionally claim non-obvious combinations thereof. Allowance of claims 3, 8, and 13 is therefore respectfully requested because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

The Applicant also respectfully traverses the rejection of claims 3, 8, and 13 since the Applicant's claimed combination includes the limitation, as exemplified in claim 3 and not disclosed in Guo, of:

“adding a dither signal”

The Examiner states in the Office Action:

“the received signal has noise due to transmission atmosphere...thus a dither signal or a signal with noise is already under test prior to the signal under test” [deletions for clarity]

However, the claimed limitation in the present invention is an affirmative step of adding a dither signal. Guo makes no reference to or disclosure of adding a dither signal, as claimed in claims 3, 8, and 13. Allowance of claims 3, 8, and 13 is therefore respectfully

requested on this ground as well because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Regarding claims 4, 9, and 14, these dependent claims each depend from respective independent claims 1, 6, and 11, and are believed to be allowable since they contain all the limitations set forth in independent claim from which they depend and additionally claim non-obvious combinations thereof. Allowance of claims 4, 9, and 14 is therefore respectfully requested because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

Regarding claims 5, 10, and 15, these dependent claims each depend from respective independent claims 1, 6, and 11, and are believed to be allowable since they contain all the limitations set forth in independent claim from which they depend and additionally claim non-obvious combinations thereof. Allowance of claims 5, 10, and 15 is therefore respectfully requested because of *W.L. Gore & Assocs. v. Garlock, Inc.* and the other cases cited therewith, *supra*.

The Applicant also respectfully traverses the rejection of claims 5, 10, and 15 since the Applicant's claimed combination includes the limitation, as exemplified in claim 3 and not disclosed in Guo, of:

“provide a root mean square value thereof”

The Examiner states in the Office Action:

“Guo fails to disclose calculating the root mean square (RMS)”

The rejection of claims 5, 10, and 15 under 35 U.S.C. §102(b) is therefore clearly improper. As explained above in *W.L. Gore & Assocs. v. Garlock, Inc.*, all the elements must be found in a single reference, and the Examiner has acknowledged that this is not the case:

“Anticipation requires the disclosure in a single prior art reference disclosure of each and every element of the claim under consideration.” *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983) (citing *Soundsciber Corp. v. United States*, 360 F.2d 954, 960, 148

USPQ 298, 301 (Ct. Cl.), *adopted*, 149 USPQ 640 (Ct. Cl. 1966)), *cert. denied*, 469 U.S. 851 (1984). *Carella v. Starlight Archery*, 804 F.2d 135, 138, 231 USPQ 644, 646 (Fed. Cir.), *modified on reh'g*, 1 USPQ 2d 1209 (Fed. Cir. 1986); *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). [underlining for clarity]

It is therefore respectfully submitted that the now-amended independent claims 1, 6, 11, and 16, and the respective claims 2-5, 7-10, 12-15, and 17-20 depending therefrom, are not anticipated by Guo under 35 USC §102.

Claim Rejections - 35 USC §103

Claims 16-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Guo (U.S. Patent No. 5,400,370, hereinafter "Guo") in view of IEEE Design and Test of Computers, "FPGA and CPLD Architectures: A Tutorial" (hereinafter "IEEE").

Guo was previously summarized above.

IEEE provides a tutorial on FPGA and CPLD architectures.

The Examiner stated:

"Claim 16 inherits all the limitations of claims 1,6,11..." [bold in original]

With regard to the inherited limitations of claim 16, these same issues have been discussed in detail above with respect to the rejections of claims 1, 6, and 11, and those arguments are equally applicable to the rejection of claim 16. Consequently, the Applicant's claimed combination would be patentable over Guo in view of IEEE. On those same bases, therefore, the Applicant respectfully traverses the rejection of claim 16.

With regard to the inherited limitations of claims 17, 18, 19, and 20, these same issues have similarly been discussed in detail above with respect to the respective rejections of claims 2, 7, and 12, 3, 8, and 13, 4, 9, and 14, and 5, 10, and 15. Those arguments are equally applicable to the respective rejections of claims 17, 18, 19, and 20. Consequently, the Applicant's claimed combinations would be patentable over Guo in view of IEEE. On those

same bases, therefore, the Applicant respectfully traverses the rejections of claims 17, 18, 19, and 20.

Additional Remarks

The Li et al. patent, U.S. 7,120,215, is timely disclosed herewith in an IDS inasmuch as it was noted only after it recently issued, on October 10, 2006.

Conclusion

In view of the above, it is submitted that the claims are in condition for allowance and reconsideration of the rejections is respectfully requested. Allowance of claims 1-20 at an early date is solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including any extension of time fees, to Deposit Account No. 50-0374 and please credit any excess fees to such deposit account.

Respectfully submitted,



Mikio Ishimaru
Registration No. 27,449

The Law Offices of Mikio Ishimaru
333 W. El Camino Real, Suite #330
Sunnyvale, CA 94087
Telephone: (408) 738-0592
Fax: (408) 738-0881
Date: December 14, 2006